

## E-Health: lacking financial resources and health quality production

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### Abstract

The health sector is being studied as an object of individual interest with that of society, in order to pursue equity without sacrificing efficiency, citizens of different Italian regions can access services that are equal in quantity and quality. In health care, the problem from the economic point of view is relevant as the health needs are infinite, while resources are limited and scarce.

In the field of health, the objectives have evolved, passing from the elimination of infectious diseases to the extension of life. The World Health Organization defines health as a right to be counted among other fundamental rights that belong to people.

The analysis of the work carried out focuses on the concept of healthcare seen through the eyes of economists, of how to deal with the fundamental economic questions of what, how and for whom to produce dictated by the distance between need and resources that drives the search for greater productivity and fair re-source allocation systems; discussing the need and expectations for public health intervention.

The Italian Health Service has founded its origins on the recognition of health as an individual right linked to citizenship and as a collective asset to be protected. The financing is based on the principle of the welfare state, which connects the payment to the contribution capacity and the use of services to anyone who manifests a need within the Italian territory.

Since the beginning of the 1990s, a process of reorganization of the health system was initiated, which was mainly oriented towards the research and improvement of tools for assessing the quality perceived by the user. The search for tools that can reduce as much as possible the inconvenience that the citizen may encounter in contact with highly bureaucratic systems and structures such as health care tend to be.

The socio-demographic evolution of the population and the need to balance the available resources with the quality of the healthcare provided, require the definition of new ways of providing health services. In the field of public health, a growing demand for quality in the provision of care and assistance services has intensified in recent years. The increase in interfaces between telematic networks and health and social services is part of the general transformation process of world society due to the progressive increase in the degree of use of ICT services.

The improvement of the quality of health services concerns the management of total quality understood as the management process aimed at establishing the organizational activities that allow the improvement of overall performance.

The success of the organization lies in the continuous and careful communication of the needs related to health by users caused by bad lifestyles, therefore prevention and socio-health policies should reduce the probability of citizens getting sick.

From the analysis carried out, the proposal that is made is that the mission assigned to hospitals on the basis of their classification allows users to be "empowered" to health-related problems without compromising the principles of effectiveness, legal efficiency and health law.

If the goal of our communities is to improve the health level of the population, it is important to promote health policies not only in terms of health services, but also aimed at removing or in any case reducing the impact of a series of risk factors. Therefore, it is hoped that future health policies will increasingly target individual and social risk factors, with health interventions also in sectors such as education, working conditions, transport and nutrition.

**Keywords:** e-health, risk, health care, empowerment, health quality.

## 1.Introduction:

The process of health production, input-output and outcome

The health sector, analyzed from the point of view of economists, allows us to study the distribution of "scarce" resources of the community and the multiple needs of citizens. In healthcare, the needs to be met are infinite, therefore resources will never be sufficient in the face of needs to be met. In a civil and advanced country, the user chooses a health system intended as "a state of complete physical, mental and social well-being and not just as an absence of disease. Therefore, the principle of the right to health protection must be made operational, choosing an organizational model that ensures quality and cost containment at the same time. The economic analysis consists in ensuring that the conditions of allocative efficiency, production efficiency and equity exist in the health system

In the case of health, the Region decides how many and which health structures to prepare to be able to provide the LEA necessary to meet the needs of the population, one must then ask what are the criteria for deciding which structures to actually implement, and in what proportion or how many beds read for acute compared to beds for long-term care, rehabilitation, palliative care; and then, what is the best way to provide health services. The only way to evaluate what the effect of a choice could be is to resort to economic models; in order to describe the production of health within a complex economic system, it is necessary to highlight the types of choice necessary to produce health starting from the amount of resources available to the community.

The first decision to be taken concerns the allocation of resources to be allocated to health, i.e. the best allocation is that which guarantees that maximum resources or satisfaction are achieved with the resources available.

The resources dedicated to the health production process are called inputs; once the inputs are obtained, a set of decisions must be made which consist in organizing the production of health services defined as outputs. The connection that takes place between inputs and out-

puts represents the process of producing health services which summarizes all the daily decisions of thousands of people with different functions and professionals who contribute to producing health services.

The related economic problem is production efficiency, i.e. producing the maximum performance by using the best available inputs. Finally, it is necessary to link the services produced or the outputs to the final result in terms of health or outcome.

In healthcare, unlike what happens in other production sectors, a distinction must be made between output, i.e. the performance and services produced, and outcome that is health, which is the final aim of the whole process. The effectiveness of health services has significant economic implications, since health workers efficiently allocating resources destined to health by producing outputs, the benefits obtained consist in the production of health.

To provide effective performance, it is necessary to rely on guidelines based on the results of the so-called EBM or Evidence-Based Medicine and on protocols. EBM takes into consideration all the scientific evidence produced and compares it with each other with particular techniques to provide scientific groups and professional associations with elements for the formation of guidelines.

The guidelines are recommendations for conduct and indicate, based on the available knowledge, the appropriate clinical behavior in the average user, leaving the management of the individual case to the operator. They refer to the complete management of the user and not only to the therapies, identifying the times and ways of involving family members or the best care settings.

The protocol is a formalized model of professional behavior for which the operators who use it are responsible. The protocol consists in the description of a succession of physical, mental, verbal actions, mostly incorporated in decision algorithms; that is, the protocol identifies the best care strategy compatible with the actual situation in which the individual operator works and allows to complete the economic evaluation with the clinical point of view, in order to ensure the best result in terms of outcome.

## 2. *Electronic health: secure and interoperable information system*

Digital healthcare is a complex reality, that is, a macro area for the large number, a macro-phenomenon that can be described according to the representative models of the markets, in which the subjects and processes involved are high, both in number and in complexity.

The World Health Organization defines the concept of e-Health as the "state of complete physical, psychic, social well-being and not just as absence of disease", on the other the digital one, intended as the use of technologies applied to diagnostic tools, to the organizational processes of health systems, to the market.

Among the figures included in the dynamics of delivery and use of health services, individuals, public and private, natural and legal persons are involved, who deal with the sale and purchase of goods and services functional to the activities related to the introduction of new technologies in the health sector.

Around the sixties, physicists, mathematicians and doctors began to deal with e-health, paying special attention to biomedical profiles. Since the end of the nineties and, with greater continuity from the beginning of the New Century, examining the action strategies promoted by the European Union and the consequent operational plans put in place by the member countries, many documents have been adopted at Community level which have concerning e-Health.

The rationalization of public health expenditure, organization of highly complex structures and systems, collaboration between healthcare professionals through telemedicine tools, access to information on assistance and care by users, aggregation and immediate availability of personal and clinical data in digital health records, are just some of the many profiles examined by the European Commission, which also pays considerable attention to the growing and current phenomena of international mobility, multiculturalism that increasingly characterize contemporary society and whose implications, in the matter of health care, are of significant importance.

The health system, as a public service, cannot be exempt from a process of structural renewal, in this sense it becomes essential to rethink traditional organizational forms and define a patient-based institutional system, in which the dialogue between technology and user push towards a simplification process of the bureaucratic apparatus. The results of this approach include the acquisition of a good level of empowerment by the user, which, in fact, benefits individuals, health systems and civil society.

New technologies play a key role in that they facilitate access to information and facilitate collaboration between organizations and professionals. Especially in a historical period, such as the current one, characterized by strong international mobility, appropriateness and optimization of treatment processes, the use of ICT is central to the "European" socio-health system. In particular, thanks to the electronic health records, the user's medical history is obtained in an updated and complete manner, accompanied by prognosis, diagnosis, therapeutic indications, diagnostic images.

In order for this hypothesis to become a reality, however, it is essential to implement the interoperability of the systems which, to date, are still manifested as a critical node for health information systems.

The digitization of the data contained in the medical records produces the positive effects both for the individual user and for the Public Administration as this innovation produces results in terms of efficiency and effectiveness. Significant are the actions undertaken by national governments aimed at reducing the complexity of the bureaucratic apparatus, to improve the timing and quality of the provision of services offered to users. Equally significant are the public interventions adopted to guarantee the security of health information systems, thanks to the which, users and operators are encouraged to use communication networks and to exchange health data.

The European Commission has already spoken several times to encourage Member States to strengthen national policies and legislation, in order to promote a homogeneous development of infrastructures which could witness a significant growth in demand for goods and services available on the Net.

The hope for the entire Action Plan designed by the European Commission is of strong synergy between the member countries. In order for the European digital healthcare market to be able to record positive trends, according to the Commission, it is necessary to allocate further funding for research in e-healthcare, to guarantee greater legal certainty by regulating the sectors of healthcare through the network, labor law on accidents and occupational diseases, develop information networks based on fixed and wireless, broadband and mobile infrastructures, and on GRID technologies to improve the interoperability of electronic medical records. Equally essential is, to increase the sensitivity and culture of users towards the issue of e-Health, through concrete health education interventions. To this end, the provision of accessible information systems, such as telematic websites on public health, as well as collaboration between Member States for the dissemination and sharing of good practices are decisive. In compliance with the principle of subsidiarity, each government has the task and duty of guaranteeing the right of access of its citizens to health, providing efficient and effective means, of which an adequate regulatory framework shared between the member states is an essential part. Benefits of interoperability, and therefore of the flow of sensitive user data within the Union, are, first of all, the rapid accessibility of the user's clinical and health information and the consequent increase in quality and safety in care.

### *3. The Electronic Health Action Plan 2012-2020*

The President of the Task Force made up of high-level experts in the field of electronic health, said that the digitization of health and healthcare is still significantly delayed due to regulatory tasks; these obstacles must be overcome in order to fully exploit the benefits of a robust and interoperable eHealth system in Europe. The bureaucratic-administrative systems of the Governments are burdensome as a consequence the fragmentary nature of the law prevents, better dissemination and usability of information and health services.

To comply with the revitalization of the digitization of healthcare, already called for by the

European Digital Agenda and the Europe 2020 strategic plan, and to respond to new challenges in the e-healthcare sector, at the end of 2012 the European Commission defined a specific action plan, Electronic Healthcare 2012-2020. Healthcare whose operational objectives can be summarized with greater interoperability of e-health systems, research, development and innovation in digital health in order to improve efficiency and effectiveness of the services offered to consumers. What emerges from the Action Plan is the solicitation for a strong interaction between all subjects involved in any way involved in health dynamics. The term eHealth indicates the use of ICT in health products, services and processes aimed at improving citizens' health, efficiency and productivity in the health sector in order to attribute greater economic and social value to health. The benefits of e-Health for citizens, patients, health workers are remarkable in that it makes health care centered on citizens and aims to reduce cases of errors in the health sector.

Therapies performed with IT aids, which can effectively integrate ordinary clinical care, improve the cost efficiency of the treatments. The use of the electronic medical record favors the free movement of European Union citizens within the Union.

The strategy outlined in the Action Plan is based on the use and development of electronic healthcare to face the most urgent healthcare challenges for:

- improve the management of chronic diseases and improve effective practices aimed at the prevention and promotion of health;
- make health systems more sustainable and efficient by encouraging innovation;
- improve health security, solidarity and equity;
- improve legal and market conditions for developing eHealth products and services.

The action plan aims to achieve greater interoperability of e-health services, to support research, development and innovation in e-health and well-being in order to counter the scarce availability of tools and services oriented to customer.

### *4. The Regional Health Plan*



Over the past few years, the Regions have assumed an increasingly direct and responsible role in health matters; in addition to carrying out planning and regulatory activities, they also have a direct involvement in the management and financing of health services. The purposes that each Region must achieve in health matters are included in the Regional Health Plans, through which the strategic aspects of the interventions to be put in place for the protection of health, as well as for the better functioning of the services, are identified.

The regional health plan must be prepared, taking into account the objectives identified by the national health plan; in order to ensure coordination, the Regions send the draft plans to the Minister of Health, in order to obtain their opinion.

Within one hundred and fifty days from the entry into force of the National Health Plan, the Regions must adopt their own Regional Health Plan, the preparation of which is the responsibility of the Regional Council.

An important participatory role is played by local autonomies, by private non-profit social formations, engaged in social and health care, by trade unions of public and private health workers and, finally, by structures accredited by the NHS. In the event that the Health Plan is not adopted by the Region, the provisions contained in the National Health Plan apply. The Region which has remained in default within one year of the entry into force of the PSN must take action within a term established by the Minister of Health, not less than three months. After this deadline, the Council of Ministers, on the proposal of the same Minister of Health, after consulting the Agency for Regional Health Services, in agreement with the Permanent State-Regions Conference, adopts the necessary measures to implement the PSN in the Region.

The Legislative Decree, 229/1999, amending the Legislative Decree 502/1992, has confirmed, in general, to the Region all its powers, providing that their exercise in the planning function takes place in a more immediate relationship with the Municipalities. To this end, Legislative Decree 229/1999 provided for the establishment, with regional law, of a permanent Conference for regional health and socio-health planning, of this assembly ensures the

connection or inclusion in the representative body of local self-government, where established, between Regions and Municipalities, a relationship equivalent to that already operating at national level between State and Regions. For each local healthcare company, some representatives of the local self-government, that is the Mayor or the president of the Conference of Mayors depending on the size of the company itself, are part of this Conference; it also includes representatives of regional associations of local self-government. The Conference examines the draft Regional Health Plan, verifies the implementation plans of hospital companies and makes any comments on the matter.

The Regional Health Plan, the content of which must comply with the indications of the National Health Plan, has the purpose of defining the objectives to be achieved over a three-year period for the regional area of action; as well as the consequent lines of action to be pursued. In the Regional Health Plan, if on the one hand the training path of strategic decisions is extremely rigid, on the other the contents and implementation methods, entrusted to regional laws, are very flexible. The Regional Health Plan must take into account several factors, such as the analysis of the financial needs, the monitoring of essential levels of assistance, the performance and priority interventions, the monitoring of health expenditure.

The report on the health status of the country aims to present the results achieved with respect to the objectives set by the national health plan. In addition to this primary task, the report illustrates the health conditions of the population present in the area, exposes on the resources used and the activities carried out by the NHS, provides indications for the development of health policies and the planning of interventions. The function of the report is, on the one hand, to verify the application of the objectives set by the PSN on the national territory, on the other, to illustrate the results achieved by the individual Regions, on the respective regional territories, in relation to the provisions of the health regional plans.

### *5. The quality of health services*

Legislative Decree 502/1992 in Article 10 emphasizes the need to guarantee the quality of services by adopting the "verification and review of the quality and quantity of services, as well as their cost" method. The qualitative and quantitative indices must condition the organizational models of the healthcare companies as well as the information system of the same and the relationships between public and private subjects as well as the legislation regarding employment contracts.

The competences on the matter are shared between the Regions and the Minister of Health. The Regions are responsible for verifying compliance with the provisions relating to minimum requirements and for classifying the supply structures in order to determine the relevant activities regarding the assessment of the quality of health services. The Minister of Health is responsible for exercising the supervisory powers, for establishing by decree issued in agreement with the State-Regions Conference and having heard the competent Orders, contents and methods of use of the efficiency and quality indicators and reporting, during the course of the report on the health status of the country, regarding the checks of the results achieved.

The quality of health services is analyzed using efficient management methodologies.

Risk management is a methodology used in the health sector but changed from the financial one. Risk management is a structured methodological approach, since it is aimed at assessing risks that are already identified or identifiable as such. Without knowledge of the risk, there is no possibility to prepare or take corrective actions for improvement.

Healthcare involves the technological and at the same time the professional or human dimension; from this characteristic derives its assimilation to highly risky sectors that have already implemented strategies aimed at optimizing and increasing the quality of the services provided within the context of a wider and more innovative vision of risk management.

In the healthcare sector, we speak more precisely of clinical risk management, i.e. a corporate function that is central to the clinical governance model and whose role is to identify and prevent risks, that is, manage risk with undoubted positive effects on perceived and expected quality of the services provided.

The quality model of the health system is aimed at obtaining an efficient and effective level of quality of health care, understood as access to services, the relevance of collective needs, the practical effectiveness of individual users, equity and impartiality in the treatment, the social acceptability in the provision of the service and the efficiency and economy of the service rendered.

In any case, regardless of the model used, the priorities linked to the respective principles depend on the needs and expectations of each interested party. In the context of health care, the interesting parts include the beneficiaries of a service or treatment, the professionals and health personnel who provide the service, the managers and those who pay for the service.

The improvement of the quality of health services regards the management of total quality, understood as continuous improvement of quality, with reference to a management process aimed at establishing organizational activities of continuous improvement that involve all the components of an organization, in an integrated and overall aimed at improving overall performance. The cardinal principles that underpin total quality management include that the success of the organization lies in the adherence of all the components of the need of the users who benefit from the service; quality is a consequence of the production processes within which the causal interactions are complex.

Total quality management focuses on work processes, the implementation of total quality management implies focusing on operational processes, the explicit identification and measurement of user needs; the existence of multi-functional working groups, necessary to identify and solve quality problems; learning and continuous improvement, through research activities in order to increase the quality of the health services offered and best meet the numerous needs required by users.

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